National Aeronautics and Space Administration

NASA's Strategic Capabilities Assets Program

NASA JOHNSON SPACE CENTER
THERMAL VACUUM CHAMBER A

Chamber A is the larger of two thermal vacuum test chambers located in the Space Environment Simulation Laboratory at the Johnson Space Center. Its usable test volume and high-fidelity space simulation capabilities are adaptable for the thermal vacuum testing of a wide variety of test articles. The major structural elements of the chamber are the 13.7-meter (45-foot) diameter floor, the 12.2-meter (40-foot) diameter access door, and the dual crewlocks at both the floor level and the 9.4-meter (31-foot) level. Chamber A has been instrumental in testing space vehicles and components for all major programs since Apollo. It is currently being modified to support the James Webb Space Telescope (JWST) project. These changes will make it possible to simulate the deep space thermal environment required to test the telescope.

CURRENT SPECIFICATIONS

Outside dimensions	65 feet (19.8 meters) in diameter x 120 feet (36.6 meters) high
Working dimensions	55 feet (16.8 meters) in diameter x 90 feet (27.4 meters) high
Test article weight	150,000 lb (68,100 kg) concentric load maximum
Access	40 feet (12.2 meters) in diameter side-hinged door
	Dual crewlocks with doors at floor level and 31 feet (9.4 meters). Locks measure 8 feet high, 11 feet wide, and 12.8 feet long (2.4 meters x 3.4 meters x 3.9 meters)
	Door at 62 feet (18.9 meters) level
	Catwalk platforms at 31 feet (9.4 meters) and 62 feet (18.9 meters) levels
Types of pumps	Staged roughing pumps, valved and trapped oil diffusion pumps, and 20 K (-424 °F) cryopump panels
Environment	90 K liquid nitrogen heat sink shrouds at 1 x 10^{-6} Torr
Pumpdown time	8 hours to test conditions
Pumping capacity	2 x 10^{-7} liters/second condensibles and 3 x 10^{5} liters/second noncondensibles at 1 x 10^{-6} Torr pressure

POST-JWST MODIFICATION SPECIFICATIONS

Outside dimensions	65 feet (19.8 meters) in diameter x 120 feet (36.6 meters) high
Working dimensions	45 feet (13.7 meters) in diameter x 80 feet (24.4 meters) high
Test article weight	150,000 pounds (68,100 kg) concentric load maximum
Access	40 feet (12.2 meters) diameter side-hinged door Dual crewlocks with doors at floor level and 31 feet (9.4 meters). Locks measure 8 feet x 11 feet x 12.8 feet (2.4 meters x 3.4 meters x 3.9 meters) Door at 62 feet (18.9 meters) level Catwalk platforms at 31 feet (9.4 meters) and 62 feet (18.9 meters) levels Types of pumps: Staged roughing pumps, valved cryo absorption pumps, valved turbomolecular pumps, 20 K (-424 °F) cryopump panels
Environment	20 K helium heat sink shrouds at 1 x 10^{-6} Torr
Pumpdown time	24 hours to test conditions
Pumping capacity	2 x 10^{-7} liters/second condensibles and 3 x 10^{5} liters/second noncondensibles at 1 x 10^{-6} Torr pressure.

CONTACT INFORMATION

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